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## RARE SPECIES OF FISHES FROM THE COAST OF SOUTHERN CALIFORNIA

KATSUWONUS PELAMIS (Linnæus)

OCEANIC BONITO

*Euthynnus pelamys* Jordan & Gilbert, Synopsis 430,  
1883.

*Gymnosarda pelamis* Dresslar & Fesler, 1899.

THIS fish is rather common along the coast of Southern California where it is known as Bonito, the local species of *Sarda* (*lineolata* or *chilensis*) being called Skipjack. Both are canned, with other large fishes of this type, as *Tuna*.

Dr. Kishinouye has lately separated this species from the genus *Euthynnus* (*alleteratus*) under the name of *Katsuwonus*, derived from the Japanese name, *Katsuwo*. The two genera, with *Auxis*, he places in a distinct family, *Katsuwonidae*, characterized by the trellice-like union of the vertebral appendages posteriorly. The genus *Euthynnus* Lütken has been confused, by the present writer, with *Gymnosarda* Gill, but the latter proves to be an ally of *Sarda* with the caudal vertebrae of the usual type.

Specimens of *Katsuwonus* from California, Hawaii and Japan need comparison with the original Mediterranean species. It is possible that the Pacific species, called *affinis* in Japan, may be different.

#### BRAMA RAII Bloch

This wide-ranging species is occasionally taken off the coast of Southern California. I have before me a specimen sent from San Diego with photographs of two others, the one from Santa Catalina (Dr. C. F. Holder), the other from Queen Charlottes Island, British Columbia.

#### BALISTES POLYLEPIS Steindachner

*Balistes polylepis* Steindachner. Ichth. B tr. v. 21, 1876. Magdalena Bay, Mazatlan, Acapulco.

This well marked trigger fish is common along the Mexican coast. I have one example from off Santa Catalina (T. Shooter). It is well separated from its allies by its very small scales (70 to 75), and in the adult by the defective lateral line. It may be regarded as the type of a distinct subgenus or genus under *Balistes*. This may be called *Verrunculus*, recalling the common Spanish name (Pez Puerco) of these fishes (*verres* = a pig).

#### ACHIRUS BARNHARTI Jordan

*Achirus barnharti* Jordan. Of the family of Broad Soles, *Achiridae*. Univ. Cal. Publ. Zoöl. XXVI, 1, pp. 1-14, 1923. Coronados Islands.

The present writer has lately described a remarkable new species of Broad Sole, almost circular in form, taken off the Coronados by Mr. Percy S. Barnhart of the Scripps Institution at La Jolla.

#### XANTHICHTHYS MENTO

One specimen from off San Diego. It is apparently distinct from *X. ringens*, described from unknown locality, probably the West Indies.

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THE STATUS  
OF AMPHIARDIS INORNATUS  
(GARMAN)

Two recent reports of additional specimens of *Amphiardis inornatus* (Garman), making now four specimens in all, suggest the advisability of a critical examination of the status of this form.

*Amphiardis inornatus* was originally ascribed by Garman<sup>1</sup> to the genus *Virginia*, within which genus Garman also included *Potamophis striatulus* (Linné). Cope<sup>2</sup> in 1888 proposed for it the new genus *Amphiardis*, and in 1900<sup>3</sup> the same author says that "it is most nearly allied to *Haldea* (i.e. *Potamophis*), from which it differs only in the presence of two internasal plates", and Brown in 1901<sup>4</sup> makes the same interpretation. By all it is apparently agreed that *Amphiardis inornatus* is a valid species.

A peculiarity of the two cotypes of *A. inornatus* is that the two internasal plates are asymmetrical, the left in each case being the smaller. The specimen from Sapulpa, Okla., determined by Schmidt<sup>5</sup> as *A. inornatus*, is like the cotypes in every respect except that it is the right internasal that is smaller. Through the kindness of Dr. Barbour and Mr. Schmidt I have examined the cotypes and the Sapulpa specimen and I find them to agree perfectly with *Potamophis striatulus*—except for the two asymmetrical internasal plates. Asymmetry in the scutellation of snakes, particularly when inconstant, as in this instance, strongly suggests abnormality.

<sup>1</sup>*Mem. Mus. Comp. Zool.*, vol. 8, pt. 3, 1883, p. 97.

<sup>2</sup>*Proc. U. S. Nat. Mus.*, vol. 11, 1888, p. 391.

<sup>3</sup>*Rep. U. S. Nat. Mus.* for 1898, 1900, p. 1009.

<sup>4</sup>*Proc. Acad. Nat. Sci.*, Philadelphia, 1901, p. 16.

<sup>5</sup>*Copeia*, no. 73, 1919, p. 72.

In search of other examples of *Amphiardis inornatus* I examined the internasal region of each specimen of *P. striatulus* in the collections of the U. S. National Museum, the Museum of Zoölogy of the University of Michigan, the American Museum of Natural History, and in my own collection—54 specimens in all. *A. inornatus* is indeed rare, as I found none. I did, however, find an incipient one, so to speak. A specimen from Jefferson County, Mo. (U.S.N.M., no. 56407), has on its single internasal plate a depression on the left side of the median line, both on its anterior edge and on its posterior edge. If these short grooves were connected with each other across the scute, two internasals would result, the left smaller, and we should have a new record for *Amphiardis inornatus*.

Other instances could be cited of species having been founded on individual variations. Such are *Coronella formosa anomala* Bocourt, based upon a specimen lacking the loreal plate, *Lampropeltis multistriata* Kennicott, based upon an individual with 8 instead of 7 supralabials, *Natrix bisecta* Cope, based upon an individual with divided rostral, *Virginia harperti* (Dumeril and Bocourt), based upon a specimen having 3 postoculars, instead of the commoner number, 2.

The fourth specimen of *A. inornatus* is reported by Van Denburgh<sup>6</sup> from San Antonio, Texas (California Acad., no. 30980). This one I have not examined. However, Mr. Slevin, with Dr. Van Denburgh's permission, has very kindly given me a full description of it, including pencil sketches of critical parts. This specimen I determine to be *Virginia valeriae elegans* (Kennicott) for the following reasons: (1) The scales are slightly keeled, except the first three rows which are almost or quite smooth (in *P. striatulus* not more than the lowermost row of dorsal scales is smooth); (2) the supralabials are 6 on each side (in *Potamophis*

<sup>6</sup>Copeia, no. 104, 1922, p. 24.

only 5); (3) the posterior chin shields diverge prominently behind (an important feature distinguishing *Virginia* from *Potamophis*—see figs. 271 and 272 in Cope, *Rep. of U. S. Nat. Mus.* for 1898). The only peculiar feature about this specimen is the presence of only 10 caudal scutes. Regeneration of a mutilated tail in a snake is often nearly perfect, and I suspect this to be such a case. However, this has no bearing upon the present question. The internasal plates in this specimen are a little asymmetrical, it is true (the right being the smaller), but no more asymmetrical than in a specimen of *Virginia valeriae valeriae* from Dunn-Loring, Virginia (U.S.N.M. no. 17446).

In summary, it would appear necessary to regard *Amphiardis inornatus* (Garman) as a synonym of *Potamophis striatulus* (Linné).

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## OBSERVATIONS ON THE LIFE HISTORY OF AMBYSTOMA OPACUM

DURING the spring of 1923 I secured in St. Tammany Parish 110 specimens of an aquatic salamander possessing all the characters of the larva of the genus *Ambystoma*. On March 12 of that year I collected 42 of these in a shallow wooded cypress and tupelo pond in the sandy valley of the Bogue Falaya River on the outskirts of Covington, La. On March 16 eight more were taken in a similar pond on the Tchefuncta River, 6 miles west of the first locality. Collecting again on the Bogue Falaya, I secured 60, March 18, in the same pond as the first lot.

These larvæ were fairly uniform in size, ranging from 1 7-8 to 2 1-4 inches in length, the average being approximately two inches, and having eleven costal grooves. In life they were a dusky brown to black above, with a lighter and often white belly. The white ventral portion was bordered by dusky toward the sides and on the chin, and in the darker specimens the dusky color encroached on the white in varying degrees. A row of yellow dots on each side of the back extended onto the tail, tending to appear on every third costa but closer just behind the head and on the tail. A row of larger and closer yellowish blotches on each side extended from the gills backward, sometimes one on each costal ridge, with an occasional gap. The body was sprinkled with light on the lower part of the sides, these light markings tending to and often forming a light band extending from the insertion of the fore limb to the insertion of the hind limb. The lips were light bordered.

In my past collecting in this region I have taken only two species of adult *Ambystomas*: *Ambystoma opacum* and *Ambystoma talpoideum*, both rare and

found only in the narrow sandy valleys of small rivers, being absent in the long-leaf-pine flat region through which these rivers flow. In the long-leaf-pine hills a few miles north, however, there are indications that they may be more abundant; at least their habitat is more frequently encountered. A third species, *Ambystoma microstomum*, known from this region only from a few old records, seems to be absent now, judging from continued negative results. Perhaps this species is unable to cope with the changed conditions and has retreated before the advance of civilization in the form of razor-back hogs, forest fires, or denuding of adjoining forest areas and the consequent more exaggerated periods of flood and drouth in the small river valleys of this region. The presence of eleven instead of fourteen costal grooves eliminates this species as one of the possibilities, however.

I endeavored to keep a few of these larvæ until transformation would take place, but unfortunately they were placed in an aquarium in which were some young *Sirens* and *Amphiumas*. Several days later it was noticed that either part or all of their limbs and gills were missing, all but one specimen being either dead or in a very weakened condition. This one, which had the gills complete and but one forelimb missing, was placed alone in an aquarium. In a few days it too appeared to be in a weakened condition, and, as the gills had practically disappeared, I realized that the loss of gills with the other specimens may not have been entirely due to the voracious amphibians. I transferred the specimen to a jar containing damp mosses, and in a few days it transformed into an individual very much resembling a young *Plethodon glutinosus*. All larval markings had disappeared and the animal was black with silvery white spots irregularly scattered. Except for the eleven costal grooves, the newly transformed specimen seemed to be at least very much like *Ambystoma microstomum*. A leg bud had

appeared in place of the missing member. The specimen was retained alive until May 17. During the interval since transformation the spots had gradually rearranged themselves and fused, so that by this date the specimen had all the color characters of a typical young *Ambystoma opacum*, the size being exactly two inches. The lost limb had also been regenerated.

On April 23, same year, I had another opportunity to collect salamanders in the same locality near Covington, but not a single larva could be obtained. A few young specimens showing the typical markings of adult *A. opacum* were secured under logs, however. The evidence seems to indicate that the transformation period is centered around the first of April.

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